The identification of *Passiflora incarnata* in herbal medicine by Nuclear magnetic resonance spectroscopy (NMR).

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**Introduction**

The species *Passiflora incarnata* is widely used in herbal medicine because of its properties to treat insomnia, anxiety and nervousness. It is used in the form of an extract which is standardized based on its flavonoid content, calculated as vitexin. Herbal medicines containing the extract were analyzed by NMR to verify the identity and quantity of the extract of *Passiflora incarnata*. The analysis were made by nuclear magnetic resonance spectroscopy (1H-NMR) because this offers the possibility to obtain a fingerprint from the metabolites and compounds present in the herbal medicine, which can show the presence of falsification or mistaken identity.

**Results and discussion**

The herbal medicines which according to the label contained *Passiflora incarnata* extract, were directly extracted with DMSO-d6. The resulting solution was analyzed by 1H-NMR. The NMR spectra showed the characteristic signals of flavonoids. The flavonoid profile was in accordance with that reported for *P. incarnata* in the literature1,2,3. The spectral part of the 1H-NMR spectrum that provided most information was the region between 6.0 – 9.0 ppm, because this region shows the aromatic signals of the flavonoids present. The extract of *Passiflora incarnata* is characterized by the presence of especially two flavonoids. The major one is isovitexin and the second vitexin. In herbal medicines the quantity of flavonoids is generally expressed as vitexin, but considering that vitexin is not the major flavonoid, this might be considered misleading.

In one of the herbal medicines no indications for the presence of the *P. incarnata* extract were found, while the labelled quantity should be easily detected.

**Conclusions**

By 1H-NMR the presence of *Passiflora incarnata* extract can easily be confirmed, and quantification of the major flavonoids is possible. It offers the advantages of a very rapid and comprehensive analysis.

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**References**